Appendix G

DOH Comments on Metam-sodium

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

OFFICE OF ENVIRONMENTAL HEALTH AND SAFETY

7171 Cleanwater Lane, Building 4 — P.O. Box 47825— Olympia, Washington 98504-7825

TDD Relay Service (800) 833-6388

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Office of Pesticide Programs
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave, NW
Washington D.C. 20460-0001

Attention: Docket ID number OPP-2005-0125

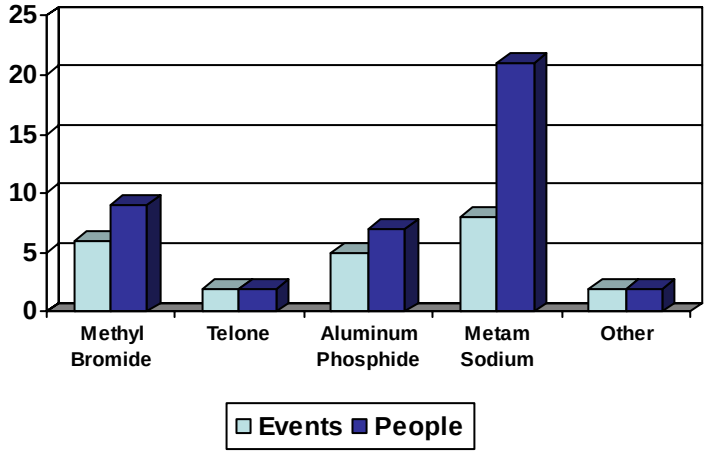
RE: Public comments for the metam-sodium docket

Washington State Department of Health conducts illness surveillance on pesticide-related illnesses. State law requires primary physicians to report suspected and known cases of pesticide-related illness. We also receive referrals from the Washington Poison Center, other state and local agencies, and individuals. Since 1990, our program has investigated over 5,000 reported cases of possible pesticide illnesses/injuries. Not all cases were considered related to pesticides upon investigation. Data from investigations are published annually and used by state agencies and community groups to guide prevention efforts. Details about data collection methods and incident data are available at our website http://www.doh.wa.gov/ehp/ts/PEST.HTM.

Fumigant products have long been of concern to DOH staff. Although the proportion of cases involving fumigants is not large (4 percent in a recent 5 year period), fumigant-related illnesses can be severe, long-lasting, and can involve large numbers of people.

Figure 1 shows the specific fumigant involved in 41 fumigant cases[1] investigated in 2000-2004 in WA.

WDOH Pesticide Illness Surveillance Data, 200-2004



[1] 41 cases of illness or injury considered definitely, probably or possibly related to fumigant exposure. The 41 people were involved in 23 separate events.

Metam-sodium is the fumigant most frequently involved in reported cases. WA State does not have pesticide-use reporting so we are unable to calculate the risk of illness per application for separate fumigant products. Metam-sodium may be reported more because it is used more than other fumigants.

Our program has compiled two reviews of metam-sodium cases. The first was published in the journal *Clinical Toxicology*[2] and summarized all fumigant cases from 1992-1996. The second summarized cases 1994-2001 and was sent to the Health Effects Division, Office of Pesticide Programs, EPA in November 2003 at the start of metam-sodium's re-registration process. This second review is attached for your convenience. For this comment period, we updated the case review with a spread sheet of 12 metam-sodium events involving 34 people investigated 2000-2004. Investigation of metam-sodium cases in WA reveals that there are worker protection issues as well as community drift issues with this fumigant.

Occupational Exposures:
A review of our documented illnesses involving metam-sodium fumigation shows that exposures to pesticide handlers fell into four categories:

- The worker did not understand the hazards of the product,
- the worker did not have adequate respiratory protection,
- the worker was over-exposed because of equipment failure,
- the worker was over-exposed despite following label directions.

Several cases occurred when a pesticide handler drenched their clothing or leather boots with metam-sodium, and continued working. They did not understand they were at risk for skin burns. They also must also know how to decontaminate. For instance, one worker tried to decontaminate his drenched leather boots with water. This allowed the rapid conversion of metam-sodium to the fumigant, MITC, and led to first and second degree burns on both feet.

Respirators are required and normally worn by metam-sodium handlers. Unfortunately, workers have become ill when these respirators were not fit-tested to ensure an adequate seal of the face. Another worker was in an enclosed cab but smelled the chemical. Investigation revealed that the cab had only a simple air filter. Employers must ensure that respirators are fit-tested and worn properly. Handlers need to be aware that if they smell the product they must stop and check their respirator.

Several incidents occurred when hoses burst. Workers must wear goggles and skin protection when working around pressurized equipment. Accidental exposure during these incidents caused eye injury and burns to the face.

[2] Burgess, JL; Morrissey B; Keifer, KC; and Robertson, WO (2000) Fumigant-related illnesses: Washington State's five-year experience. Clinical Toxicology 38(1) 7-14.

Several cases of illness occurred despite apparent compliance with the label. The first two may reflect dermal sensitization to MITC. EPA should consider that some MITC may be produced during the application and that their glove recommendation for handlers should protect against metam-sodium and MITC. If a specific glove type is necessary, the label should provide the more specific glove recommendation.

> **940576** – Applicator had eye irritation and skin burns after his shift checking the pumping station during metam-sodium chemigation of a potato circle. Applicator noted that he wears rubber gloves but has similar reaction every year he conducts fumigation.
>
> **010201** – Applicator had dermal symptoms, wheezing and eye irritation after 4 days of soil fumigation with PPE. DOH Investigation could not confirm that all PPE was worn properly but no violations were identified.
>
> **020005** – Handler finished his night shift monitoring a chemigation and fell asleep in private truck parked 100 ft from the field. He awoke to a strong smell and suffered respiratory symptoms for 6-8 weeks. There was no inversion at the start or during the application; however, an early morning inversion developed holding the fumigant close to the ground.

Community exposures

Strong smelling volatiles from metam-sodium soil fumigations can drift to surrounding communities during or after the application and cause irritant symptoms. There is some evidence from CA incidents that persistent respiratory effects are also possible following community exposures[3]. In WA, most drift exposures involving metam-sodium are from chemigation methods.

Cases reported to WDOH generally do not involve direct drift of chemigation water. This doesn't mean this type of exposure is not occurring; only that acute illnesses are not resulting or if they are, are not being reported. In fact, there are many anecdotal stories of receiving a free "car wash" when the overhead sprinklers of a central pivot system spray onto the road.

Metam-sodium drift incidents reported to WDOH usually involve drift of methyl isothiocyanate (MITC) and other volatiles after completion of the application. The largest incident reported in WA involved drift from a crop circle to an industrial facility where 17 employees were sent home. Nine employees participated in the WDOH investigation and were considered probable or possible cases. This case occurred when a weather inversion developed in the early morning hours and volatiles from the recently chemigated field drifted to a neighboring building. Another case involved police officers making a routine traffic stop next to a field being chemigated. They did not feel spray or mist but they did report a strong smell and subsequent symptoms.

Issues:

Definition of drift. It is important that the EPA definition of metam-sodium drift includes drift of MITC volatiles leaving the site after fumigation. Drift of MITC volatiles must be regulated and violations enforceable.

[3] CDPR (2002) Evaluation of methyl isothiocyanate as a toxic air contaminant, Part C – Human Health Assessment. Prepared by the Medical Toxicology Branch, DPR, California EPA TAC-202-01C August 26, 2002.

Measuring exposure to MITC during illness incidents. MITC is a gas and is present in air. Presently WSDA, the main agency enforcing EPA rules against pesticide drift, does not have air sampling equipment. This means that when an incident occurs, they must document the drift with visual observations and other methods. Air sampling would allow for better investigation of drift complaints. It would also aid in the human health investigations.

Investigating and mitigating community inhalation hazard. DOH is concerned with reported air monitoring data from CA[4]. These data show that air levels of MITC in agricultural communities exceeded levels of human health concern. Lee et al. (2002) reported that exposure estimates for MITC exceeded health-based reference values for 50 percent of the population in the monitored areas. This report from the California Department of Health Services, ranked MITC as one of the top pesticide air pollutants in CA[4]. Washington growers tend to use chemigation methods rather than shank injection. Chemigation is associated with more off-gassing of MITC[5]. Washington State does not currently conduct community air monitoring to pesticides and therefore can not evaluate whether similar exceedences are occurring in WA.

We encourage EPA to assess and mitigate potential inhalation hazard in communities living near fumigated fields. We urge EPA to collect and use data from Washington rather than rely solely on Florida or CA data. Washington State is second to CA in the amount of metam-sodium applied annually. WA air data will ensure that fumigation practices, soil type, and weather patterns unique to WA are included in the model and that WA residents are protected by EPA risk assessments.

Thank you for the opportunity to comment.

Barbara Morrissey, MS
Toxicologist,
Pesticide Program: Illness Monitoring and Prevention

Illness/injury incidents involving metam-sodium, 2000- 2004, Washington

Brief summary of pesticide illness investigations conducted by the Washington Department of Health, Pesticide Program For definitions of DOH determinations go to: http://www.doh.wa.gov/ehp/ts/Pest/pest-illness-investigation.htm#Howclassifycases

DOH#	Mo/Year (exposure)	County	Product	DOH determination	Narrative
000186	May 2000	Yakima	Vapam	Probable	A 33 year old worker was applying Vapam to hops by hand-held gun attached to truck mounted tank. He was wearing leather boots and no chemical resistant PPE. He splashed liquid on boots and continued working. He developed contact dermatitis on his feet and sought medical care.

[4] Lee S et al. (2002) Community exposures to airborne agricultural pesticides in California: Ranking of inhalation risks. *Environmental Health Perspectives 110 (12):* 1175-1184.

[5] Sullivan DA et al. (2004) Control of off-gassing rates of methyl isothiocyanate from the application of metam-sodium by chemigation and shank injection. Atmospheric Environment 38:2257-2470.

000308	November 2000	Franklin	Vapam HL	8 Probable 1 Possible	At least nine employees of an industrial facility complained of symptoms after three crop circles adjacent to their building were chemigated. Symptoms included nausea, headache, and burning in eyes and throat. Two employees sought health care.
010208	October 2001	Grant	Metam CLR 42%	2 Possible	Two male police officers developed ocular and respiratory symptoms after parking next to potato circle that was being chemigated. Officers were parked on side on main highway for 30 minutes during a routine traffic stop. Both sought medical care. Two other officers also had symptoms but could not be reached for interview.
010201	November 2001	Grant	Metam-sodium (could not confirm exact product name)	Probable	A 19 y/o male applicator reported he had been applying a soil fumigant for several days. He developed respiratory, ocular, and dermal symptoms and sought medical treatment two days later when symptoms did not resolve.
020005	2002		Sectagon 42	Probable	A 24 year old licensed applicator and chemigation specialist developed respiratory problems after monitoring a chemigation for 17 hours. He wore PPE during his shift but fell asleep in his truck 100 ft from the field after his shift. An inversion developed and he awoke to strong fumes in the truck. Symptoms continued for 6-8 weeks.
020236	September 2002	Franklin	Sectagon 42	Suspicious	A 34 year old female grape harvester became ill while harvesting grapes. Patient claims respiratory distress may be from an application 1/4 to 1/2 mile away. A soil fumigant was being applied to a potatoes crop circle by chemigation.
030271	October 2003	Franklin	Sectagon 42	Definite	A 41 year old male working for a chemical distributor spilled fumigant onto his boots when transferring the product to a field tank. He rinsed with water which activated the product and caused burns to both feet. He sought medical care for dermal symptoms.
030280	October 2003	Grant	Vapam HL Soil Fumigant	4 Possible	A family, ages 63, 29, 23 yrs, and 11 mos. developed respiratory symptoms after they smelled vapors from a potato chemigation with metam-sodium. Field was 250 ft from the house. One person sought medical care. WSDA surface wipe samples on the complainant's property were negative for deposited residues.

040211	April 2004	Grant	Metam CLR 42%	2 Probable	Two male irrigation district workers (41 and 63 y/o) developed respiratory symptoms when they walked in an area where a fumigant was being illegally dumped. They did not seek medical treatment. WSDA tests were positive for residues of the product. Dumping was investigated by WSDA.
040223	August 2004	Walla Walla	Vapam (specific product not confirmed)	Insufficient	A 36 year old female went to the ER for dermal symptoms. Apparently patient had obtained the pesticide from a neighbor and was using it for weed control when she spilled it on herself. Unable to verify details with patient.
040277	October 2004	Franklin	Vapam HL Soil Fumigant	Insufficient	On 10/01/04, a 49 year old male delivery driver for chemicals went to the hospital for a dermal reaction on his hands. He had been handling a fumigant and wearing rubber gloves. The worker believes it is allergic reaction to the rubber gloves. Patient was discharged with treatment for contact dermatitis.